

SOME MORPHOLOGICAL FEATURES OF *PLASMODIUM FALCIPARUM*

BY

J. W. W. STEPHENS

(Received for publication 22 January, 1924)

PLATES II, III

W.S. admitted to hospital 7.10.22 from West Africa.

A microscopical examination of stained films (Leishman or Giemsa) showed numerous *P. falciparum* parasites and a very scanty crescent infection.

The red cell infection rate was approximately 1 per cent., and the relative numbers of single and multiple infections were:—single, 69 per cent. ; multiple, 31 per cent.

The large majority of the parasites were uniform in size, of a diameter approximately equal to a third of that of the red cell. No pigment was detected in any of these 'rings.' It was frequently observed that part of the cytoplasm stained a deep bluish black, either in the form of an isolated spherical dot or dots, resembling somewhat pigment grains, or in a streak not uncommonly extending from the nucleus; this shade of colour contrasting sharply with the lighter blue of the rest of the parasite. The form of the nucleus, while variable, was commonly that of a half hoop or bar.

A more prolonged examination of these films revealed many peculiar forms, some of which are here figured diagrammatically.

These forms were somewhat uncommon, but could always be found by systematic search through the films with a mechanical stage.

They can be arranged in three groups.

PLATE II—

(A). *Those in which there is a cytoplasmic connection between two adjacent parasites.*

Figs. 1-4. The appearance is that of a bridge or strand varying in width, in some cases clearly visible; in others (not figured) the apparent strands were so thin that doubt arose as to their reality.

(B). *Those in which there is a nuclear connection between two adjacent parasites.*

Figs. 5 and 6. The parasites overlap, and accordingly, the appearance of a nuclear connection may be accidental.

Fig. 6. The symmetry of the two unusually elongated parasites is noteworthy.

Figs. 7-9. Fine threads pass from one nucleus to the other.

Fig. 8. Whereas in Fig. 7, two parasites were evidently present, in this case it was impossible to be certain whether one or two separate parasites existed.

Fig. 9. Has the appearance of a dividing parasite, the red cell being spindle-shaped. No other example like this was found.

Figs. 10-16. Thicker easily visible strands stretch between the nuclei.

Fig. 10. In this case again, apparently only one parasite body was present, and the nuclear symmetry is striking.

Fig. 12. A parasite beginning to divide or a parasite with a bilocular 'vacuole.'

Figs. 13, 14, 16. The parasite bodies are distinctly separated from one another in each case and apparently are in process of division.

Fig. 15. Traction may have had an influence in producing this extended form.

PLATE III—

(C). *Symmetrical Parasites.*

Figs. 1-4. Although speaking generally, one 'ring' is like another, in these cases the symmetry and correspondence in morphological detail would appear to be more than an accidental occurrence.

(D). *Miscellaneous forms.* These include a number of forms differing considerably in appearance from those described in the standard text-books.

Fig. 5. Has two symmetrical nuclei, a rare feature in the parasites in these films.

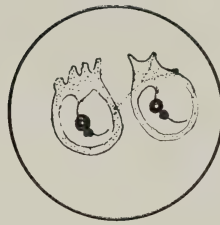
Fig. 6. A very peculiar form. Two overlapping parasites, one having a curved crescent-like appearance.



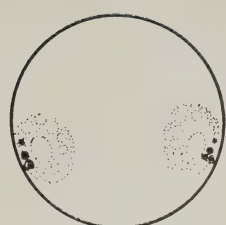
I



2



3



4



5



6



7



8



9



10



11



12



13



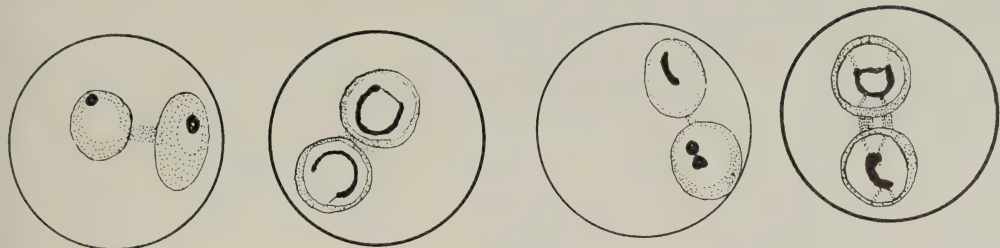
14



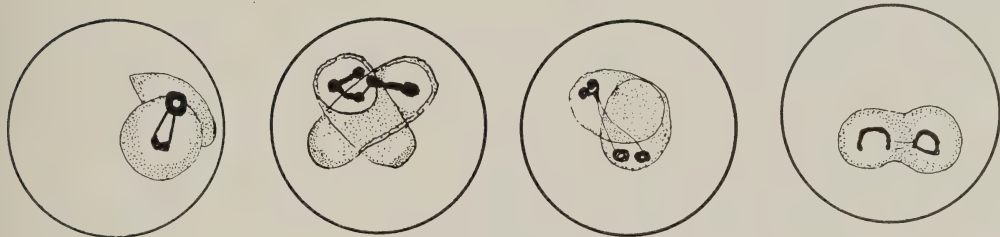
15



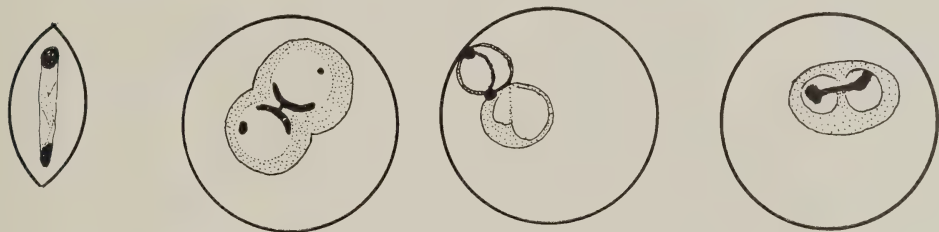
16



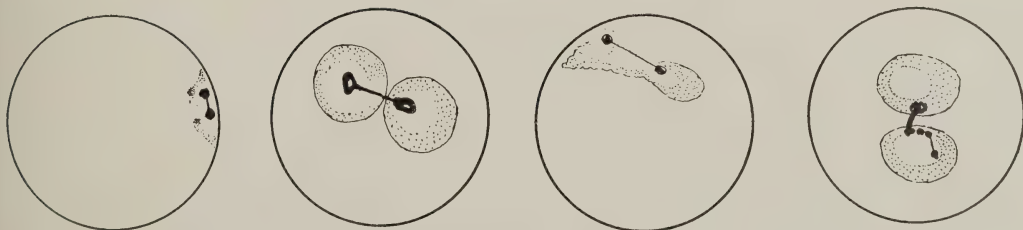
1 2 3 4



5 6 7 8



9 10 11 12



13 14 15 16